

DOCKET NO: 287782US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
CHRISTOPHE FRINGANT, ET AL. : EXAMINER: MICHAEL PEPITONE
SERIAL NO: 10/572,944 :
FILED: OCTOBER 13, 2006 : GROUP ART UNIT: 1796
FOR: POLYMER COMPOSITION :

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from the Final Rejection dated April 28, 2010. A Notice of Appeal is filed herewith.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Solvay (Societe Anonyme) having an address of Rue du Prince Albert, 33, Brussels, Belgium 1050.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 13, 15, 16, 21-23, 26, 28 and 36-47 stand twice rejected and the rejections are herein appealed. Claims 1-12, 14, 17-20, 24-25, 27 and 29-35 are cancelled.

IV. STATUS OF THE AMENDMENTS

No amendment under 37 CFR 1.116 has been filed.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

It is preliminarily noted that references in brackets are to page and line number of the specification as filed.

Independent Claim 13 provides a polymer composition comprising

- 1) a polymer (P1)[page 2, lines 26-31] comprising at least 50% by weight [page 3, lines 7-9] of monomeric units derived from an ethylenically unsaturated monomer (M1) [page 3, line 4 - page 5, line 3], and
- 2) at least one co-oligomer (O1) [page 7, lines 1-28] comprising at least:
 - a) a component (A) comprising at least one monomeric unit identical to that derived from the monomer (M1) [page 7, lines 22-28] on which the polymer (P1) is based, and
 - b) a component (B) comprising at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group -PO(OH)(OR₁) with R₁ being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms[page 8, lines 27-28],wherein the number-average molar mass of polymer (P1) is greater than 30,000 [page 2, lines 30-31] and the number-average molar mass of co-oligomer (O1) is less than or equal to 30,000[page 7, lines 7-9].

Dependent Claims 15, 16, 21-23, 26 and 28 stand or fall with Claim 13.

Dependent claim 44 provides the composition according to Claim 13, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group $-\text{PO}(\text{OH})(\text{OR}_1)$ with R_1 being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms is selected from the group consisting of [page 13, line 11- page 14, line15]:

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-(\text{CH}_2)_i-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CR}_{10}\text{R}_{11}-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CH}_2-\text{CH}(\text{OH})-\text{CH}_2-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CH}_2-\text{CH}(\text{OH})-\text{CH}_2-\text{CO}-\text{O}-(\text{CH}_2)_2-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{CO}-\text{O}-(\text{CH}_2)_i-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{CO}-\text{O}-\text{CR}_{10}\text{R}_{11}-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms,

$\text{CH}_2=\text{C}(\text{CH}_3)-\text{C}_6\text{H}_4-\text{C}(\text{CH}_3)_2-\text{NH}-\text{CO}-\text{O}-(\text{CH}_2)_i-\text{PO}(\text{OH})(\text{OR}_1)$ with i between 1 and 20,

$\text{CH}_2=\text{C}(\text{CH}_3)-\text{C}_6\text{H}_4-\text{C}(\text{CH}_3)_2-\text{NH}-\text{CO}-\text{O}-\text{CR}_{10}\text{R}_{11}-\text{PO}(\text{OH})(\text{OR}_1)$ with R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms and the substitution of the aromatic ring being in the meta-position,

$\text{CH}_2=\text{CH}-\text{C}_6\text{H}_4-\text{CH}_2-\text{PO}(\text{OH})(\text{OR}_1)$ with the substitution of the aromatic ring being a mixture of ortho- and para-substitution,

$\text{CH}_2=\text{CH}-\text{PO}(\text{OH})(\text{OR}_1)$, and

the corresponding monomers carrying at least one group $-\text{PO}(\text{OR}_1)(\text{OR}_2)$ with R_1 and R_2 , which are the same or different, representing an alkyl radical containing from 1 to 11 carbon atoms which, after total cleavage or partial cleavage, results in the phosphonate group $-\text{PO}(\text{OH})(\text{OR}_1)$,

and mixtures thereof.

Dependent Claim 45 stands or falls with Claim 44.

Independent Claim 36 provides a polymer composition comprising

1) a polymer (P1) [page 2, lines 26-31] comprising at least 50% by weight [page 3, lines 7-9] of monomeric units derived from an ethylenically unsaturated monomer (M1), [page 3, line 4 – page 5, line 3] and

2) at least one co-oligomer (O1) [page 7, lines 1-28] comprising at least:

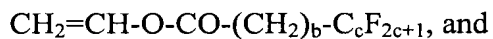
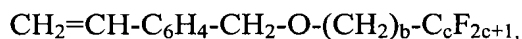
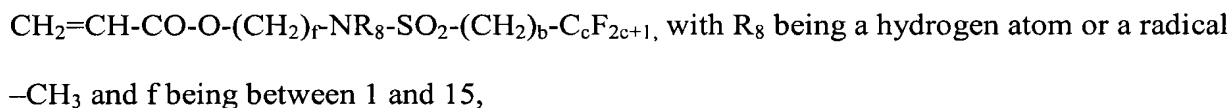
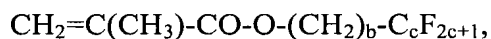
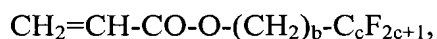
a) a component (A) comprising at least one monomeric unit identical to that derived from the monomer (M1) [page 7, lines 22-28] on which the polymer (P1) is based, and

b) a component (B) comprising at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5 [page 8, line 22],

wherein the number-average molar mass of polymer (P1) is greater than 30,000 [page 2, lines 30-31] and the number-average molar mass of co-oligomer (O1) is less than or equal to 30,000 [page 7, lines 7-9].

Dependent Claims 37-43 stand or fall with Claim 36.

Dependent Claim 46 provides the composition according to Claim 36, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(CH_2)_b-CF_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5 is selected from the group consisting of [page 9, lines 18-32]:



mixtures thereof.

Dependent Claim 47 stands or falls with Claim 46.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Ground A

Claims 13, 15-16, 21-23, 26, 28 and 44-45 stand twice rejected under 35 U.S.C. § 103(a), as being unpatentable over Padget et al. (EP 0185464) in view of Denk et al. (U.S. 2,971,948).

Ground B

Claims 36-43 stand twice rejected under 35 U.S.C. § 103(a), as being unpatentable over Padget et al. (EP 0185464) in view of Thames et al. (U.S. 6,599,972).

Ground C

Claims 36-43 and 46-47 stand twice rejected under 35 U.S.C. § 103(a), as being unpatentable over Padget et al. (EP 0185464) in view of Behr et al. (U.S. 6,365,769).

VII. ARGUMENT

Ground A

Rejection of Claims 13, 15-16, 21-23, 26, 28 and 44-45 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Denk et al. (U.S. 2,971,948).

Claims 13, 15-16, 21-23, 26 and 28

The claimed invention provides a polymer composition for coating surfaces composed of materials including metals, polymers, paper and cellophane, for example. Appellants have invented a composition containing components, which when applied to the surface to be coated migrate to a location of the coating where they are useful, i.e., air surface, substrate interface, coating mid-section (page 1, lines 27-32). Such a composition provides a

technological advantage in that upon formation of a single coating, material components may arrange to sought location of use (page 2, lines4-6).

According to the invention as described in Claim 13, the composition contains a polymer (P1) and at least one co-oligomer (O1) wherein the polymer is of higher molecular weight than the co-oligomer. Appellants submit that this molecular weight difference is necessary so that the co-oligomer can migrate to a location of desired utility during the formation of the coating. Additionally, the co-oligomer contains a functional component, described as “at least one phosphonate group $-PO(OH)(OR_1)$ with R_1 being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms” in Claim 13.

Appellants have shown in Examples 7 and 8 (Pages 31-33) as depicted in Figures 3 and 5 that in the formed coating the oligomer forms portions of the coating described as nodules which migrate toward the metal interface section of the coating. The surface of the coating is virtually devoid of phosphorous (page 32, lines 26-31).

Appellants submit that such coating performance is only possible when the coating composition has the specific component elements as claimed.

Padget describes a contact adhesive which is defined (page 1, second paragraph) as a substance which when coated on two substrates to be bonded enables a strong bond to be formed between the two substrates when the two coated surfaces are contacted. The Padget composition contains two copolymers, A and B. The copolymers are described in terms of a modal molecular weight (page 5, first paragraph) and copolymer A is a vinylidene chloride copolymer having a molecular weight in the range 100,000 to 700,000 (page 5, last paragraph) while the molecular weight of copolymer B may be greater than or less than 100,000 (page 6, lines 7-11). Padget indicates that the molecular weight of copolymer B is not critical (page 6, line 7).

Padget describes that either copolymer A or copolymer B may contain an ethylenically unsaturated acid (page 6, lines 17-24) and describes a content range of 0.1 to 8 weight % for both copolymer A (page 10, lines 1-3) and copolymer B (page 11, lines 10-12). Padget provides examples of copolymer A compositions in Tables 1 and 2 and Appellants submit that in every example, acrylic acid is contained. Likewise in every example of Table 3, showing copolymer B compositions, acrylic acid is contained.

Appellants submit that nowhere does this reference describe a polymer composition containing a polymer according to the present invention and an oligomer component having a molecular weight less than 30, 000 and containing at least one phosphonate group.

The Office has noted that Padget attributes “adhesion-promoting functionality” to the presence of the carboxylic acid in the copolymer B (Official Action dated April 28, 2010, page 3, lines 11-12) but fails to note that as described above this functionality is present in both copolymers A and B.

Appellants further note that Padget is directed to a contact adhesive composition and describes a wide variety of applicable substrates, including wood, paper, textiles, panelling, plastics, glass, concrete, ceramics and metals (page 21, lines 21-29). Accordingly, Appellants submit that the “adhesion-promoting functionality” referenced is directed to any substrate or to the actual contact adhesion force. This is further supported by Padget’s indication that the carboxyl group can serve in a cross-linking capacity (page 15, lines 26-29).

The Office has acknowledged that Padget does not teach the copolymer B comprising a monomeric unit containing a phosphonate group (Official Action dated April 28, 2010, page 3, lines 13-14). Denk is cited as showing vinylidene chloride copolymers comprising vinyl phosphonic acids as adhesion promoters (Official Action dated April 28, 2010, page 3, lines 15-16).

Denk describes copolymers of **vinyl chloride** (Title) which are lacquer products for metal surfaces. A vinyl phosphonate monomer is included in the copolymer for **adhesion to a metal surface**.

Appellants submit that Denk is directed to vinyl chloride copolymers, with the possible optional presence of vinylidene chloride listed as one in a list of numerous possible optional monomers (col. 1, lines 15-17 and line 66 - col. 2, line 1). Appellants have previously submitted a declaration by Vincent Bodart, an inventor of record in this application. As provided in paragraph 3 of the Bodart Declaration, one of ordinary skill in the art would *not* look to Denk in order to modify Padget. Nor is there anything in the combination of Padget and Denk to suggest the present combination of a polymer (P1) and a co-oligomer (O1) where the number-average molar mass of polymer (P1) must be greater than 30,000 and the number-average molar mass of co-oligomer (O1) must be less than or equal to 30,000.

In response to Appellants arguments that one of skill in the art of vinylidene chloride based contact adhesives would not look to a reference directed to a vinyl chloride based lacquer coating for metal surfaces, the Office has stated (Official Action dated April 28, 2010, page 10, lines 8-11):

In this case, Padget et al . . . and Denk et al . . . are analogous art because they are concerned with similar technical difficulty, namely the preparation of vinylidene chloride copolymers containing adhesion promoters.

Appellants submit that nowhere does Denk disclose or suggest a copolymer where vinylidene chloride is a major component and therefore the Office's position that both references are directed to vinylidene copolymers is clearly erroneous. Furthermore, as described above, Padget describes no concern regarding metal adhesion. The Office has

alleged such concern based on mere conclusion, without any supporting technical description from the reference.

In reversing an obviousness rejection in *Ex parte* SUSUMU TANAKA and YASUO MURAKAMI (Appeal 2007-3845; Decided: March 28, 2008) the Board of Patent Appeals and Interferences stated:

In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)(Bold added for emphasis)

Appellants submit that the Office has not provided reasoning which is articulate or rationally underpinned in support of its conclusion.

Moreover, as described above, Padget describes the carboxyl functionality as preferred and notes the benefit of cross-linking associated with a carboxyl group. Appellants submit that replacing the carboxyl functionality preferred in the primary reference with the phosphonic functionality described in Denk would alter the principle of operation and/or render the Padget composition unsatisfactory for its intended purpose.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. (MPEP § 2143.01 VI.)

“If proposed modification would render the prior art being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

For all of the above reasons, Appellants submit that the rejection of Claims 13, 15-16, 21-23, 26 and 28 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Denk et al. (U.S. 2,971,948) should be reversed.

Claims 44-45

Claims 44 and 45 depend from Claim 13 and further recite that the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group -PO(OH)(OR₁) with R₁ being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms, is selected from a specific group of monomer units.

For all the reasons provided above, the cited combination of references cannot render the present invention obvious and the rejection of Claims 44 and 45 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Denk et al. (U.S. 2,971,948) should be reversed.

Ground B

Rejection of Claims 36-43 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Thames et al. (U.S. 6,599,972).

Claim 36 provides a composition containing a polymer (P1) and at least one co-oligomer (O1) wherein the polymer is of higher molecular weight than the co-oligomer. Additionally, the **co-oligomer contains a functional component**, described as an ethylenically unsaturated monomer, carrying at least one -(CH₂)_b-C_cF_{2c+1} group with b between 1 and 11 and c greater than or equal to 5.

Appellants have shown in Example 10 (Figure 6) that in a coating according to Claim 36 the oligomer containing a fluorinated group migrates toward the surface of the coating and

is not at the interface with the metal (page 35, lines 9-13). Thus a capability to obtain a coating with component (oligomer) location within the coating according to the functionality associated with the oligomer is achieved according to the invention. Appellants again submit that such result is only obtained when the polymer composition has the specific component elements as claimed.

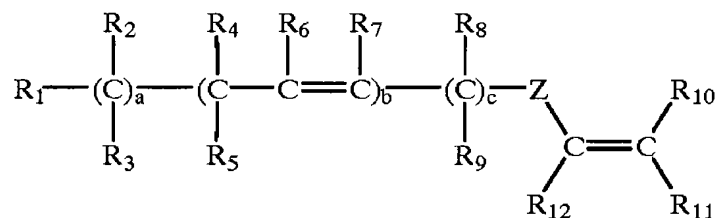
The Padget contact adhesive composition is described above. Padget further describes that the composition of copolymer A is selected to have a T_g value in the range of -50 to < 0 °C (page 8, lines 8-9) and that the T_g temperature is controlled by adjustment of the content of an internally plasticising comonomer (page 9, lines 4-11). A preferred content of the internally plasticising comonomer is 30 to 90 weight % of the polymerized units (page 8, lines 13-15).

The described T_g value for the copolymer B is from 0 to 80 °C (page 10, lines 6-7) and the copolymer B **may** include units of an internally plasticising comonomer (page 11, lines 15-16).

The Office has acknowledged that Padget does not teach the copolymer B comprising a monomeric unit containing a perfluoroalkyl moiety (Official Action dated April 28, 2010, page 5, lines 8-9) and cites Thames as showing an ethylenically unsaturated unsaturated internal plasticizer containing a perfluoroalkyl moiety.

Thames describes waterborne latex compositions which contain internally plasticizing and crosslinkable monomers (Col. 1, lines 12-15) according to formula I.

(I)



Appellants submit that formula I requires the presence of an internal unsaturation as the “b” variable must be one or two (Col. 6, lines 25-26).

In his declaration, Mr. Bodart (paragraph 4) described that there is no relationship between the internally plasticizing comonomers of Padget and the internally plasticizing and *crosslinkable* monomers of Thames, either in function or effect. Accordingly, one of ordinary skill in the art would not modify Padget by substituting the Thames internally plasticizing and crosslinkable monomers for the purely internally plasticizing comonomer described by Padget.

Appellants note that the Office alleges that (Official Action dated April 28, 2010, page 5, last paragraph);

At the time of the invention, a person of ordinary skill in the art would have found it obvious to have combined internal plasticizer containing a perfluoroalkyl moiety, as taught by Thames et al. in the invention of Padget et al., and would have been motivated to do so since Thames et al. suggests that such internal plasticizer containing a perfluoroalkyl moiety provide self plasticized compositions with no subsequent VOC emissions.

Appellants submit that as described above Padget requires an internally plasticising comonomer in copolymer A and optionally in copolymer B. The Office has not explained why one of ordinary skill would add the Thames drying and plasticizing monomer to copolymer B, rather than copolymer A.

Moreover, Appellants submit that Padget actually teaches away from addition of cross-linking monomers in the following description (page 13, lines 19-31):

Nevertheless, even though such cross-linking may be used, it is not usually preferred that a copolymer A and/or B according to composition of the invention contains such polymerized units; this is because the partial cross-linking effected during polymerization sometimes adversely effects the contactability properties of the resulting composition, and, although a small degree of such cross-linking can be tolerated, **it is not recommended as a general rule.**

In view of all the above, Appellants submit that the Office has not explained why one of ordinary skill would add the crosslinkable plasticizing monomer of Thames to copolymer B of Padget in preference to copolymer A. Padget actually teaches away from the addition of cross-linking monomers as described by Thames. Additionally, the Office has not explained why one of ordinary skill in the art would modify Padget by substituting the Thames internally plasticizing and crosslinkable monomers for the purely internally plasticizing comonomer described by Padget.

Therefore, Appellants submit that the Office has not met the burden necessary to support a conclusion of obviousness and the rejection of Claims 36-43 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Thames et al. (U.S. 6,599,972) should be reversed.

Ground C

Rejection of Claims 36-43 and 46-47 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Behr et al. (U.S. 6,365,769).

Claims 36-43

The discussion of the primary reference as provided above is applicable to this rejection.

Behr is also cited as showing fluoroalkyl(meth)acrylates.

Behr describes polymerizable perfluoroalkyl monomers which can be polymerized in polymers such as polyacrylates, polyesters, polyurethanes, polyamides, and polyvinyl ethers (Col. 6, lines 12-14).

The Office alleges that one of ordinary skill would have found it obvious to have combined the fluoroalkyl(meth)acrylates surfactants as taught by Behr et al. in the invention of Padget et al. and would have been motivated to do so since Behr et al. suggests that such fluoroalkyl(meth)acrylates are useful in improving or imparting properties to solutions and substrates such as wetting, penetration, spreading, emulsification, and flow properties (Official Action dated April 28, 2010, page 7, lines 13-17).

However, Appellants submit that the Office has not indicated or explained why one of ordinary skill would select Padget's copolymer B for such substitution. Additionally, Padget employs the internal plasticizing monomer to control T_g especially in copolymer A and only optionally in copolymer B.

In a Precedential Opinion rendered by the Board of Patent Appeals and Interferences in *Ex parte Whalen II* (Appeal 2007-4423, Application 10/281,142) on July 23, 2008, the Board stated:

The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed."

The Examiner has not persuasively explained why a person of ordinary skill in the art would have had a reason to modify the compositions taught by Evans, Greff '767, or Taki in a way that would result in the compositions defined by the claims on appeal. Therefore, The Examiner has not made out a prima facie case of obviousness under 35 U.S.C. § 103.

Appellants submit that the Office has not explained why a person of ordinary skill would at the time of the invention, have modified the composition of Padget to include the

fluoro monomer of Behr in the copolymer B. Appellants submit that only in hindsight of the present invention would such modification be obvious.

Therefore, Appellants submit that the Office has not met the burden necessary to support a conclusion of obviousness and the rejection of Claims 36-43 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Behr et al. (U.S. 6,365,769) should be reversed.

Claims 46-47

Claims 46 and 47 depend from Claim 36 and further recite that the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(CH_2)_b-CF_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5 is selected from the listed group of fluoromonomers.

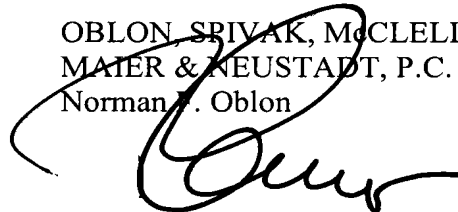
The Office has cited Behr in Example 20 as showing a monomer $C_8F_{17}CH_2CH_2OCOCH=CH_2$. However, Appellants submit that the Office has not indicated or explained why one of ordinary skill in the art at the time of the present invention would have included this monomer in copolymer B of the Padget composition. Accordingly, the Office has not met the burden necessary to support a conclusion of obviousness and the rejection of Claims 46 and 47 under 35 U.S.C. § 103(a), over Padget et al. (EP 0185464) in view of Behr et al. (U.S. 6,365,769) should be reversed.

CONCLUSION

For the above reasons, it is respectfully requested that all outstanding rejections of the pending claims be reversed.

Respectfully submitted,

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VIII. CLAIMS APPENDIX.

Claims 1-12 (Canceled).

Claim 13 (Rejected): A polymer composition comprising

1) a polymer (P1) comprising at least 50% by weight of monomeric units derived from an ethylenically unsaturated monomer (M1), and

2) at least one co-oligomer (O1) comprising at least:

a) a component (A) comprising at least one monomeric unit identical to that derived from the monomer (M1) on which the polymer (P1) is based, and

b) a component (B) comprising at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group - PO(OH)(OR₁) with R₁ being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms,

wherein the number-average molar mass of polymer (P1) is greater than 30,000 and the number-average molar mass of co-oligomer (O1) is less than or equal to 30,000.

Claim 14 (Cancelled)

Claim 15 (Rejected): The composition according to Claim 13, wherein the polymer (P1) is a chlorinated polymer.

Claim 16 (Rejected): The composition according to Claim 13, wherein in the polymer (P1) ethylenically unsaturated monomer (M1) is vinylidene chloride, which is present in an amount of 70 to 95% by weight.

Claims 17-20 (Cancelled).

Claim 21 (Rejected): A process for preparing a composition according to Claim 13, comprising the mixing of the polymer (P1) and of the co-oligomer(s) (O1) in at least one solvent, the dispersion of the co-oligomer(s) (O1) in an aqueous dispersion of the polymer (P1), or the mixing of the polymer (P1) and of the co-oligomer(s) (O1) by premixing.

Claim 22 (Rejected): A process for coating metal, polymer, paper or cellophane surfaces with the polymer composition according to Claim 13, according to which the polymer composition is coated onto said surface, colaminated with said surface or coextruded with the material forming said surface.

Claim 23 (Rejected): An article or part of an article comprising the polymer composition according to Claim 13.

Claims 24-25 (Cancelled).

Claim 26 (Rejected): A method for producing a single-layer or multi-layer film comprising forming the film with the composition according to Claim 13.

Claim 27 (Cancelled):

Claim 28 (Rejected): The composition according to Claim 13, wherein the number-average molar mass of polymer (P1) is less than or equal to 2,000,000 and the number-average molar mass of co-oligomer (O1) is less than or equal to 25,000.

Claims 29-35 (Cancelled).

Claim 36 (Rejected): A polymer composition comprising

- 1) a polymer (P1) comprising at least 50% by weight of monomeric units derived from an ethylenically unsaturated monomer (M1), and
- 2) at least one co-oligomer (O1) comprising at least:
 - a) a component (A) comprising at least one monomeric unit identical to that derived from the monomer (M1) on which the polymer (P1) is based, and
 - b) a component (B) comprising at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(CH_2)_b-C_cF_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5,wherein the number-average molar mass of polymer (P1) is greater than 30,000 and the number-average molar mass of co-oligomer (O1) is less than or equal to 30,000.

Claim 37 (Rejected): The composition according to Claim 36, wherein the polymer (P1) is a chlorinated polymer.

Claim 38 (Rejected): The composition according to Claim 36, wherein in the polymer (P1) ethylenically unsaturated monomer (M1) is vinylidene chloride, which is present in an amount of 70 to 95% by weight.

Claim 39 (Rejected): A process for preparing a composition according to Claim 36, comprising the mixing of the polymer (P1) and of the co-oligomer(s) (O1) in at least one solvent, the dispersion of the co-oligomer(s) (O1) in an aqueous dispersion of the polymer (P1), or the mixing of the polymer (P1) and of the co-oligomer(s) (O1) by premixing.

Claim 40 (Rejected): A process for coating metal, polymer, paper or cellophane surfaces with the polymer composition according to Claim 36, according to which the polymer composition is coated onto said surfaces, colaminated with said surface or coextruded with the material forming said surface.

Claim 41 (Rejected): An article or part of an article comprising the polymer composition according to Claim 36.

Claim 42 (Rejected): A method for producing a single-layer or multi-layer film comprising forming the film with the composition according to Claim 36.

Claim 43 (Rejected): The composition according to Claim 36, wherein the number-average molar mass of polymer (P1) is less than or equal to 2,000,000 and the number-average molar mass of co-oligomer (O1) is less than or equal to 25,000.

Claim 44 (Rejected): The composition according to Claim 13, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group $-\text{PO}(\text{OH})(\text{OR}_1)$ with R_1 being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms is selected from the group consisting of:

$\text{CH}_2=\text{CR}_9\text{-CO-O-(CH}_2)_i\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CR}_9\text{-CO-O-CR}_{10}\text{R}_{11}\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical and R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms,

$\text{CH}_2=\text{CR}_9\text{-CO-O-CH}_2\text{-CH(OH)-CH}_2\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical,

$\text{CH}_2=\text{CR}_9\text{-CO-O-CH}_2\text{-CH(OH)-CH}_2\text{-CO-O-(CH}_2)_2\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical,

$\text{CH}_2=\text{CR}_9\text{-CO-O-CH}_2\text{-CH}_2\text{-NH-CO-O-(CH}_2)_i\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CR}_9\text{-CO-O-CH}_2\text{-CH}_2\text{-NH-CO-O-CR}_{10}\text{R}_{11}\text{-PO(OH)(OR}_1\text{)}$ with R_9 being a hydrogen atom or a methyl radical and R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms,

$\text{CH}_2=\text{C(CH}_3\text{)-C}_6\text{H}_4\text{-C(CH}_3)_2\text{-NH-CO-O-(CH}_2)_i\text{-PO(OH)(OR}_1\text{)}$ with i between 1 and 20,

$\text{CH}_2=\text{C(CH}_3\text{)-C}_6\text{H}_4\text{-C(CH}_3)_2\text{-NH-CO-O-CR}_{10}\text{R}_{11}\text{-PO(OH)(OR}_1\text{)}$ with R_{10} and R_{11} , which are the same or different, being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms and the substitution of the aromatic ring being in the meta-position,

$\text{CH}_2=\text{CH-C}_6\text{H}_4\text{-CH}_2\text{-PO(OH)(OR}_1\text{)}$ with the substitution of the aromatic ring being a mixture of ortho- and para-substitution,

$\text{CH}_2=\text{CH-PO(OH)(OR}_1\text{)}$, and

the corresponding monomers carrying at least one group $\text{-PO(OR}_1\text{'})(\text{OR}_2\text{'})$ with $\text{R}_1\text{'}$ and $\text{R}_2\text{'}$, which are the same or different, representing an alkyl radical containing from 1 to 11 carbon atoms which, after total cleavage or partial cleavage, results in the phosphonate group $\text{-PO(OH)(OR}_1\text{)}$,

and mixtures thereof.

Claim 45 (Rejected): The composition according to Claim 13, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one phosphonate group $-\text{PO}(\text{OH})(\text{OR}_1)$ with R_1 being a hydrogen atom or an alkyl radical containing from 1 to 11 carbon atoms is selected from the group consisting of:

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-(\text{CH}_2)_i-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CR}_9-\text{CO}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{CO}-\text{O}-(\text{CH}_2)_i-\text{PO}(\text{OH})(\text{OR}_1)$ with R_9 being a hydrogen atom or a methyl radical and i being between 1 and 20,

$\text{CH}_2=\text{CH}-\text{PO}(\text{OH})(\text{OR}_1)$, and

the corresponding monomers carrying at least one group $-\text{PO}(\text{OR}_1')(\text{OR}_2')$ with R_1' and R_2' , which are the same or different, representing an alkyl radical containing from 1 to 11 carbon atoms which, after total cleavage or partial cleavage, results in the phosphonate group $-\text{PO}(\text{OH})(\text{OR}_1)$, and

mixtures thereof.

Claim 46 (Rejected): The composition according to Claim 36, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5 is selected from the group consisting of:

$\text{CH}_2=\text{CH}-\text{CO}-\text{O}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$,

$\text{CH}_2=\text{C}(\text{CH}_3)-\text{CO}-\text{O}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$,

$\text{CH}_2=\text{CH}-\text{CO}-\text{O}-(\text{CH}_2)_f-\text{NR}_8-\text{SO}_2-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$, with R_8 being a hydrogen atom or a radical $-\text{CH}_3$ and f being between 1 and 15,

$\text{CH}_2=\text{CH}-\text{C}_6\text{H}_4-\text{CH}_2-\text{O}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$,

$\text{CH}_2=\text{CH}-\text{O}-\text{CO}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$, and

mixtures thereof.

Claim 47 (Rejected): The composition according to Claim 36, wherein the at least one monomeric unit (m2), derived from an ethylenically unsaturated monomer, carrying at least one $-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$ group with b between 1 and 11 and c greater than or equal to 5 is selected from the group consisting of:

$\text{CH}_2=\text{CH}-\text{CO}-\text{O}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$, and

$\text{CH}_2=\text{C}(\text{CH}_3)-\text{CO}-\text{O}-(\text{CH}_2)_b-\text{C}_c\text{F}_{2c+1}$, and

mixtures thereof.

IX. EVIDENCE APPENDIX

Declaration by Vincent Bodart submitted with RCE and Amendment on June 30, 2009, and considered by the Examiner in the Official Action dated September 18, 2010.

DOCKET NO:

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
: EXAMINER: MICHAEL PEPITONE
SERIAL NO: :
FILED: : GROUP ART UNIT: 1796
FOR: :

DECLARATION

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

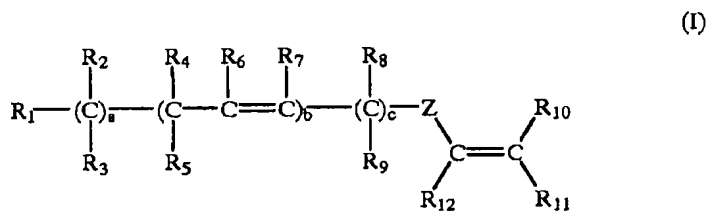
SIR:

Now comes Vincent Bodart, who states:

1. That I am an inventor of the above-identified application for U.S. Patent.
2. That I have reviewed the Official Action dated March 4, 2009, the Advisory Action dated June 16, 2009, and Padget (EP 0 185 464), Denk (U.S. 2,971,948), and Thames (U.S. 6,599,972) and the claims pending in this application, including newly submitted Claims 44-47.
3. That Denk and Padget do not relate to the same or similar types of copolymers, and one of skill in this art would not look to Denk to modify the copolymers of Padget. Denk relates to vinyl chloride materials, and would be understood as such by one skilled in this art. The fact that Denk contemplates the possible optional minor presence of vinylidene chloride

(col. 1, line 66 - col. 2, line 1 of Denk) does not make the vinyl chloride materials of Denk into vinylidene chloride-based materials. Accordingly, what Denk suggests for his described copolymers of vinyl chloride would not be taken as suggestive regarding possible modifications of the vinylidene chloride polymers of Padgett. One of ordinary skill in the art would not look to Denk in order to modify Padgett.

4. The monomer of Formula (I) of Thames necessarily requires the presence of an internal unsaturation because "b" must be one or two in formula (I) of Thames:



See column 6, lines 25-26 of the reference. These monomers are correctly characterized in Thames as crosslinkable at column 5, lines 12-13 thereof. There is no relationship, either functionally or in effect, between the internally plasticizing comonomers of Padgett as described at page 9 thereof and the above-described crosslinkable monomers of Thames. One of skill in the art would not modify Padgett by substituting the Thames crosslinkable monomers for the purely internally plasticizing comonomers described in Padgett, as the purpose and function of the Padgett monomer would not be replicated and the overall properties of the resultant crosslinked product would be expected to be quite different from anything desired by Padgett.

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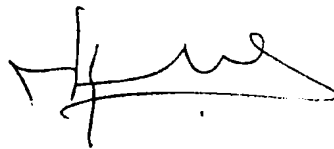
5. The crosslinkable monomers of Thames are nothing like those specified in new Claims 46-47.

6. The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believe to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further deponent sayeth not.

June 29, 2009

Date



V. Bodart

Vincent Bodart

X. RELATED PROCEEDINGS APPENDIX

None